

Pedestrian Trip Analysis in Transport Interfaces

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Transport interfaces are important poles of commuting and can influence pedestrian movements. The design and structure of interfaces, as well as the characteristics of the transport networks integrated on the interface, can affect pedestrian flows efficiency along its movement segments. More efficient multimodal interfaces lead to a reduction of the waiting and total travel times of commuters and thus, increase the importance of studying the causal relation interface-pedestrian.

The paper describes a specific simulation tool (INTRSIM) built to analyse the effects of measures like layout and frequency changes or new access equipments in the way pedestrian flows perform. The simulation tool was calibrated with the support of empirical input data from two major Portuguese multimodal interfaces (Cais do Sodré – Lisbon and Campanhã - Porto).

The comparison of empirical data for different pedestrian levels of service and moving times along the segments of the interface with indicators from scientific literature (Fruin, 1971), (Fujiyama and Tyler, 2004) and (TCQSM, 2003) corroborate the speed of pedestrian flows to respective levels of services for the analysed segments: walkways, stairways, turnstiles, queuing, waiting areas and escalators.

Through a Monte Carlo modelling simulation process, those values were then used and tested with real input data.

The validity of INTRSIM was later complemented with two additional segments, without scientific comparable measurements in scientific literature: fare gates and ticketing booths. To achieve reliable data, 3607 measurements over 6 Portuguese transport interfaces were carried out and the statistical analysis so far is encouraging.

The analysis revealed that INTRSIM is a valid tool to simulate pedestrian movements in interfaces, which includes new and innovative features on the analysis of pedestrian flows.

Keywords: Transport interfaces, commuting, pedestrian flows